## CLAIMS

1. A spatialization system (42) for at least one sound source creating for each source two spatialized monophonic channels (L, R) designed to be received by a listener, comprising:
   - a filter database (13) comprising a set of head-related transfer functions (HRTF) specific to the listener,
   - a data presentation processor (CPU1) receiving the information from each source and comprising in particular a module (101) for computing the relative positions of the sources in relation to the listener,
   - a unit (CPU2) for computing said monophonic channels by convolution of each sound source with head-related transfer functions of said database estimated at said source position,
   the system being characterized in that said data presentation processor comprises a head-related transfer function selection module (102) with a variable resolution suited to the relative position of the source in relation to the listener.

2. The spatialization system as claimed in claim 1, characterized in that the head-related transfer functions (HRTF) included in the database (13) are collected at 7° intervals in azimuth, from 0 to 360°, and at 10° intervals in elevation, from -70° to +90°.

3. The spatialization system as claimed in either of claims 1 or 2, characterized in that the number of coefficients of each head-related transfer function is approximately 40.

4. The spatialization system as claimed in one of the preceding claims, characterized in that it

comprises a sound database (14) containing in digital form a monophonic sound signal characteristic of each source to be spatialized, this sound signal being designed to be convoluted with the selected head-related transfer functions.

5. The sound spatialization system as claimed in claim 4, characterized in that the data presentation processor (CPU1) comprises a sound selection module (103) linked to the sound database (14) prioritizing between the concomitant sound sources to be spatialized.

6. The sound spatialization system as claimed in claim 5, characterized in that the data presentation processor (CPU1) comprises a configuration and programming module (104) to which is linked the sound selection module (103) and in which are stored customization criteria specific to the listener.

7. The spatialization system as claimed in one of the preceding claims, characterized in that it comprises an input/output audio conditioning module (16) which retrieves at the output the spatialized monophonic channels (L, R) to format them before sending them to the listener.

8. The spatialization system as claimed in claim 7, characterized in that since "live" communications have to be spatialized, these communications are formatted by the conditioning module (16) so they can be spatialized by the computation unit (CPU2).

9. The sound spatialization system as claimed in one of the preceding claims, characterized in that the computation unit (CPU2) comprises a processor interface (203) linked with the data presentation

unit (CPU1) and a computer (202) for generating spatialized monophonic channels (L, R).

10. The sound spatialization system as claimed in claim 9, characterized in that since the system comprises a sound database (14), the processor interface (203) comprises buffer registers for the transfer functions from the filter database (13) and the sounds from the sound database (14).

11. The spatialization system as claimed in either of claims 9 or 10, characterized in that the computer (202) is implemented by an EPLD type programmable component.

12. The spatialization system as claimed in either of claims 10 or 11, characterized in that the computer (202) comprises a source activation and selection module (204), performing the mixing function between "live" communications and the sounds from the sound database (14).

13. The spatialization system as claimed in one of claims 9 to 12, characterized in that the computer (202) comprises a dual spatialization module (205) which receives the appropriate transfer functions and performs the convolution with the monophonic signal to be spatialized.

14. The spatialization system as claimed in one of claims 9 to 13, characterized in that the computer (202) comprises a soft switching module (206) implemented by a dual linear weighting ramp.

15. The spatialization system as claimed in one of claims 9 to 14, characterized in that the computer (202) comprises an atmospheric absorption simulation module (208).

16. The spatialization system as claimed in one of claims 9 to 15, characterized in that the computer (202) comprises a dynamic range weighting module (209) and a summation module (210) to obtain the weighted sum of the channels of each track and provide a single stereophonic signal compatible with the output dynamic range.

17. An integrated modular avionics system (40) comprising a high speed bus (41) to which is connected the sound spatialization system (42) as claimed in one of the preceding claims via the data presentation processor (CPU1).